

## 2.0 FACILITY AND PROGRAM DESCRIPTION SYNOPSIS

This chapter briefly describes the Hanford Site facilities and programs as they existed up to the time of the incident. A more complete description is provided in Appendix H.

The approximately 1,450 km<sup>2</sup> (560-mi<sup>2</sup>) Hanford Site (see Fig. 1), is a DOE facility managed by RL with 11,131 workers and an annual budget of \$1.1 billion. Approximately 6 percent of the land area is actively used. The developed land is divided into the following operational areas: the 100 Areas, the 200 East and West Areas, the 300 Area, and the 400 Area. The 600 Area accounts for the land between the operational areas. The 200 East Area facilities, once used to extract plutonium from spent nuclear fuel, are now the focus of an extensive cleanup and waste management effort. Activities associated with this effort were the catalyst for this contamination event.

### 2.1 SITE FACILITIES

The following Site facilities and structures are associated with the contamination event.

- **B Plant** (see Fig. 2), which was constructed during World War II as a radiochemical processing facility, has been used for various operations, including separating strontium-90 (<sup>90</sup>Sr) and cesium-137 (<sup>137</sup>Cs) from underground tank waste. In 1995, B Plant began the formal deactivation and shutdown process completed in 1998.
- **The 241-ER-152 Diversion Pit** (Figs. 4, 5), a subsurface concrete-lined pit penetrated by underground waste transfer pipes ending in nozzles, was used to direct the flow of liquid waste by connecting short sections of pipe (jumpers) to the selected nozzles. The inside surfaces are contaminated with radioactive material deposited when waste liquids leaked through the pipe connections or installed valves. When not in use, the pit is covered with large concrete blocks to contain contamination and shield workers on the surface from direct radiation from the contamination. During work, an open-top windscreen is erected around the pit and fixative is sprayed on the inside to adhere smearable contamination to the pit surfaces before the cover blocks are removed. This process was under way on September 15, 1998, (when fruit flies may have entered the pit) to support B Plant shutdown.
- **The MO-967 Mobile Office, the 2247-B Ironworker's Shop**, and other auxiliary structures are located between the B Plant and the 241-ER-152 Diversion Pit.
- **The Canister Storage Building**, approximately 464 meters (0.3 mile) from the B Plant complex, is being constructed to provide dry staging and interim storage for spent nuclear fuel from water-filled basins in the 100 K Area. The Canister Storage Building is located 1.3 kilometers (0.8 mile) from the 241-ER-152 Diversion Pit.

**Figure 4. Typical Diversion Pit.**

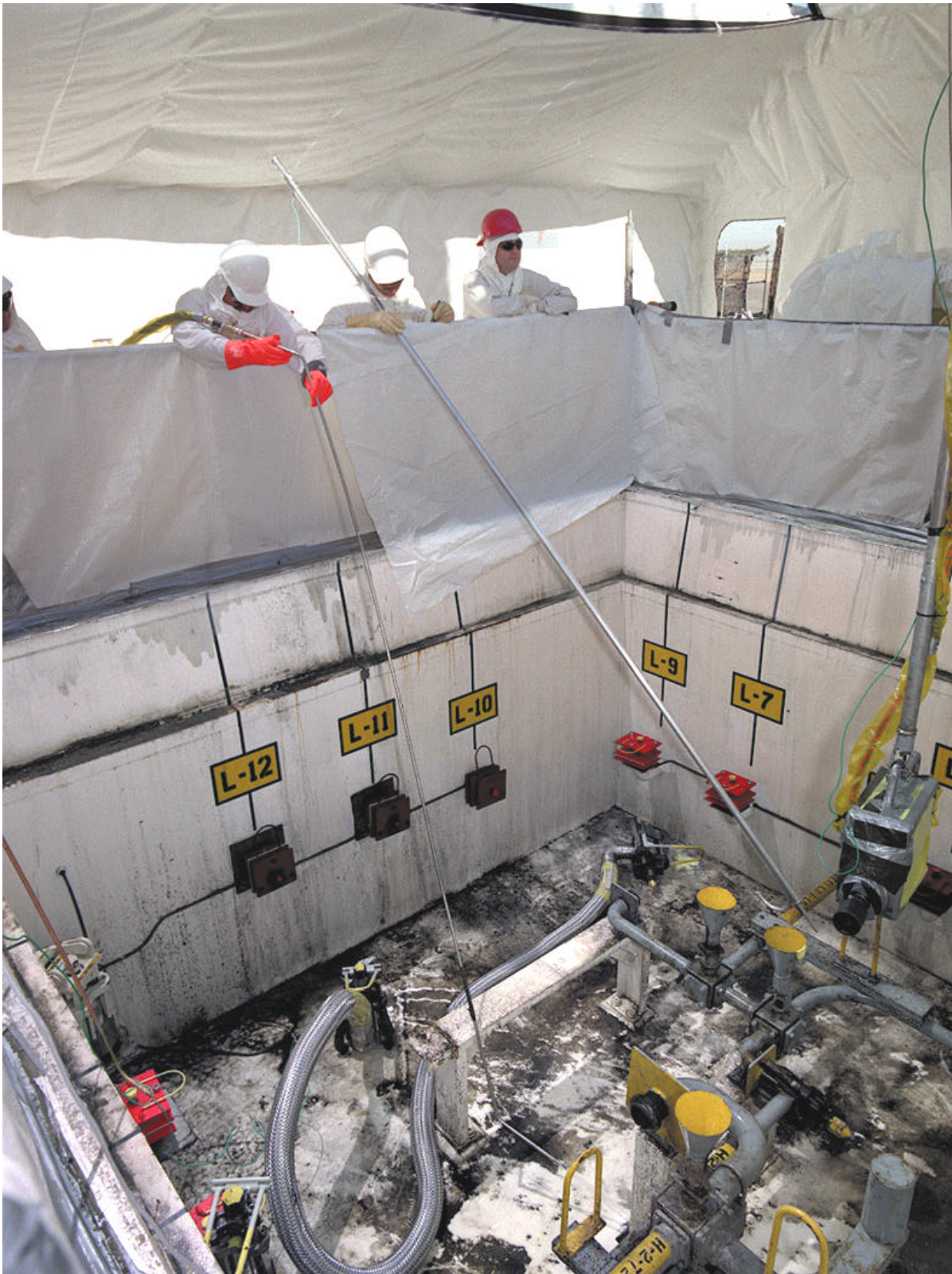
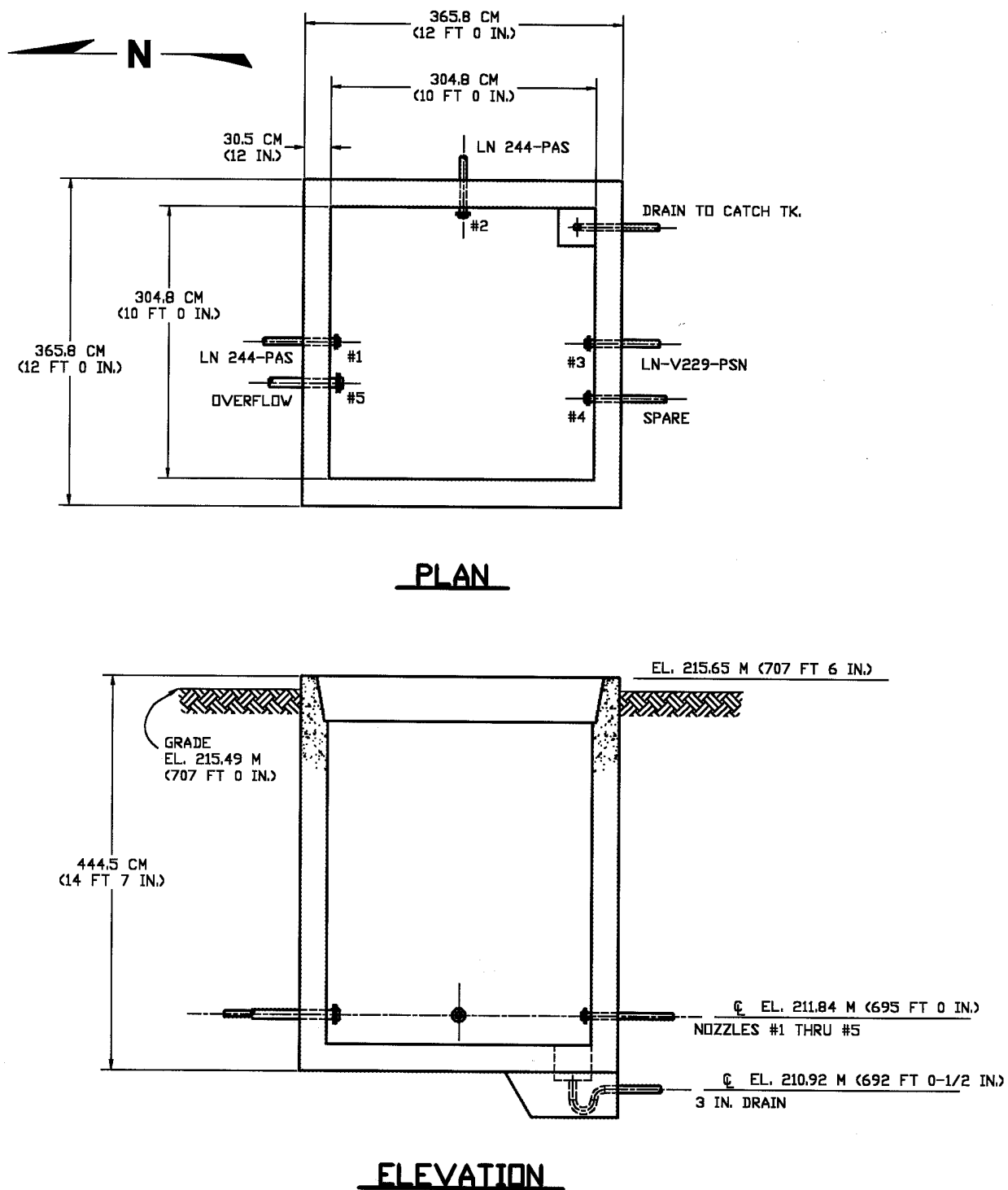


Figure 5. Drawing of the 241-ER-152 Diversion Pit.



## 2.2 WORK CONTROL

The Tank Waste Remediation System (TWRS) organization uses a planning and scheduling organization to control work such as the task performed at the 241-ER-152 Diversion Pit (work package 2E-98-01772/0). The organization reviews the task and, if necessary, develops a work package containing instructions for performing the work. Often work packages reference preapproved procedures for significant portions of the work and do not specify the type of fixative or other material to be used. Work packages are reviewed and approved before work is authorized.

## 2.3 RADIOLOGICAL CONTROL

*The 1998 contamination event was identified initially through the operation of the routine radiological monitoring program.* DynCorp Tri-Cities Services, Inc. (DYN) was performing routine radiological monitoring of the 200 East Area construction forces facilities (CFF) when the radioactive contamination was first discovered.

The Hanford Site has had a radiological control program since operations began in the early 1940s. The Program's goal is to evaluate how well Site operations anticipate, prevent, and control potential environmental and public impacts from radiological contamination. Primary emphasis on control and measurement of radioactive material is placed at individual facilities, with confirmatory measurements used for the balance of the Site.

Basic radiological control on the Hanford Site includes marking clearly defined areas controlled for radiation protection purposes. Access to these areas requires a minimal amount of training or escorting. To prevent radioactive contamination from spreading, radiological control technicians (RCT) use portable instruments sensitive to alpha radiation or beta and gamma radiation to scan all equipment and material leaving a controlled area to verify that it is free of contamination. Personnel leaving a controlled area also must be surveyed for contamination. Properly surveyed material released from a controlled area can be released unconditionally from any radiologically controlled area on the Hanford Site and released off Site.

Employees who work in contaminated areas or on contaminated equipment must wear protective clothing to protect their skin from contamination. The protective clothing is controlled after use to prevent contamination from being released. Respirators that filter airborne contaminants are required when other engineered controls are not available to prevent exposure to airborne contamination.

## 2.4 BIOLOGICAL VECTOR CONTROL PROGRAM

The Hanford Site has had an environmental monitoring program covering insects, animals, and vegetation since 1944. Since 1965 when DOE began issuing annual environmental status reports, approximately 2,000 incidents of biota-related radioactive contamination involving approximately 50 separate species have been reported. *This event is the first time that fruit flies*

(*Drosophila* spp.) *have been noted in the transfer of radioactive contamination.* As a result, monitoring of fruit flies has not been a routine activity.

Biological vector control under the Project Hanford Management Contract (PHMC) is a function of the FDH Office of Biological Control, contracted to Waste Management Federal Services, Inc., Northwest Operations (WMNW). The FDH Office of Biological Control is conducted by licensed professionals experienced in controlling pest animals and vegetation, particularly when associated with radioactive contamination. Pest control goals include limiting pest ingress and egress at facilities, creating a healthy work environment, training maintenance staff to control and prevent biologic intrusion, controlling plant- and animal-caused transport of contamination, and preventing pest damage to waste facilities.

Biological controls can be implemented at facility management's request in response to facility monitoring or as a result of Near-Facility Environmental Monitoring detecting radioactive contamination caused by biotic activity during routine surveillance. Discovery of biota-related contamination activates additional monitoring and surveillance in conjunction with increased animal control by the FDH Office of Biological Control (WMNW).

## **2.5 SOLID WASTE DISPOSAL PRACTICES**

The U.S. Department of Energy, Richland Operations Office (RL), entered into a contract with the City of Richland to dispose of nonradioactive, nonhazardous solid refuse. The contract was signed in September 1995, effective October 1, 1995, through September 30, 2005, and on March 31, 1996, the Hanford Central Landfill was closed. DYN, a subcontractor to FDH, is responsible for collecting and transporting nonradioactive and nonhazardous solid waste (refuse) for offsite disposal. DYN operates two 27 cubic meter (35-cubic-yard) capacity compactor trucks that collect the refuse collected from approximately 300 dumpsters on the Hanford Site and transport it to the City landfill for disposal (Fig. 6). PHMC and contractor procedures identify the types of refuse that can be placed in the dumpsters.

Drivers of the collection vehicles receive training about the types of refuse that are prohibited; this serves as an additional mechanism to prevent nonconforming refuse from being taken to the City landfill. Up to the time of the contamination event, RCTs from the Hanford Site surveyed the landfill for radioactive contamination weekly. Some weekly surveys were missed in August and September.

In each of the past two years, DYN Transportation Operations has transported approximately 1450 metric tons (1,600 tons) of refuse to the City landfill. Major categories of refuse disposed of off Site are office and lunchroom refuse and construction debris. Refuse from areas where radioactive contamination could occur is surveyed for release before leaving the areas.

**Figure 6. Compactor Refuse Truck.**

